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Python Tutorial

3.1 - Decision Making Statements

Decision-making statements in Java allow the program to execute certain blocks of code based on specified conditions. These statements control the flow of execution depending on whether a condition evaluates to true or false.

-Types of Decision Making Statements

- if Statements
- if-else Statements
- if-else-if Ladder

Indentation : It refers to the spaces or tabs at the beginning of a code line, used to signify a block of code in Python, such as loops, conditionals, and function definitions.

If the indentation is incorrect, it will result in an `IndentationError`.

- if Statements

It executes a block of code if a specified condition is true.

Q8. Write a Python program to:

- Input a number from the user.

- Check if the number is greater than 10.

- If the number is greater than 10, display the message: "**Number is Greatest**".

In [1]:
```
n = int(input("Enter number : "))

if(n > 10):
    print("Number is Greatest")             # Indentation
```

```
Number is Greatest
```

- if-else Statements

It executes one block of code if the condition is true and another block if the condition is false.

Q9. Write a Python program to:

- Input a number from the user.

- Check whether the number is **Even** or **Odd**

- Display **Even** if the number is divisible by 2, otherwise display **Odd**

In [2]:
```
n = int(input("Enter number : "))

if(n % 2 == 0):
    print("The number is Even")

else:
    print("The number is Odd")
```

```
The number is Odd
```

- if-else-if Ladder

It evaluates multiple conditions in sequence. Once a condition evaluates to true, the corresponding block executes, and the rest are skipped.

Q10. Write a Python program to implement a Basic Calculator that performs the following tasks (+,-,*,/)

In [6]:
```
print("Basic Calculator (+,-,*,/)")

num1 = int(input("Enter first number : "))
operand = input("Choose operand (+,-,*,/) : ")
num2 = int(input("Enter second number : "))

if operand == '+':
    print(f"{num1} + {num2} = {num1 + num2}")

elif operand == '-':
    print(f"{num1} - {num2} = {num1 - num2}")

elif operand == '*':
    print(f"{num1} * {num2} = {num1 * num2}")

elif operand == '/':
    print(f"{num1} / {num2} = {num1 / num2:0.2f}")

else:
    print("Invalid operator")
```

```
Basic Calculator (+,-,*,/)
5 / 2 = 2.50
```

Q11. Write a Python program for a simple user login system where:

- he predefined username is "admin".

- The predefined password is "password123".

- The program should prompt the user for their username & password and check if the credentials are correct.

In [1]:
```
# User login system

# Predefined username and password
stored_username = "admin"
stored_password = "password123"

# Take user input
username = input("Enter username: ")
password = input("Enter password: ")


# Check login credentials
if username == stored_username:
    if password == stored_password:
        print("Login successful!")
    else:
        print("Incorrect password.")

else:
    print("Username not found.")
```

```
Login successful!
```

Q12: Suppose the retail store management wants to provide a discount for all bill amounts as mentioned below.

Bill Amount	Discount %
>=1000	5
>=500 and <1000	2
>0 and <500	1

Also, an additional 2% discount for the customers having membership (Say membership customer IDs start from 101 to 1000 (both inclusive)). Write a Python program for the above.

In [1]:
```
bill_id = int(input("Enter bill_id: "))                 # 1001
customer_id = int(input("Enter customer_id: "))         # 150 (Membership customer)
bill_amount = float(input("Enter bill_amount: "))       # 750

# Determine base discount
if bill_amount >= 1000:
    discount_percentage = 5
elif bill_amount >= 500:
    discount_percentage = 2
else:
    discount_percentage = 1

# Additional membership discount
if 101 <= customer_id <= 1000:
    discount_percentage += 2                # Additional 2% for membership customers

# Calculate total discount amount
discount_amount = (discount_percentage / 100) * bill_amount
final_amount = bill_amount - discount_amount

# Display the bill details
print(f"\nbill id: {bill_id}")
print(f"customer id: {customer_id}")
print(f"bill amount: rs.{bill_amount:.2f}")
print(f"discount applied: {discount_percentage}%")
print(f"discount amount: rs.{discount_amount:.2f}")
print(f"final amount to be paid: rs.{final_amount:.2f}")
```

```
bill id: 1001
customer id: 150
bill amount: rs.750.00
discount applied: 4%
discount amount: rs.30.00
final amount to be paid: rs.720.00
```

Q13: The finance department of a company wants to calculate the monthly net pay of one of its employees by finding the income tax to be paid (in Indian Rupees) and the net salary after the Income tax deduction. The employee should pay income tax if his monthly gross salary is more than Rs. 5,000 (Indian Rupees) and the percentage of income tax should be considered as per the below slab. Display the employee ID, basic salary, allowances, gross pay, income tax and net pay.

Gross Salary (In Indian Rupees)	Income Tax percentage
Below 5,000	Nil
5,001 to 10,000	10 %
10,001 to 20,000	20%
More than 20,000	30%

- Employee ID must be considered as 1001,

- The basic salary of the employee must be regarded as Rs. 15000.00 and

- Allowances must be considered as Rs.6000.00

Write a Python program to solve the above real-world problem. Refer to below for the formulae to be used.

- `Monthly Gross Salary = Basic Salary + Allowances`
- `Net Salary= Gross Salary- Income Tax`

In [2]:
```python
# Define employee details
employee_id = 1001
basic_salary = 15000.00
allowances = 6000.00

# Calculate Gross Salary
gross_salary = basic_salary + allowances

# Determine Income Tax percentage
if gross_salary <= 5000:
    income_tax_percentage = 0
elif gross_salary <= 10000:
    income_tax_percentage = 10
elif gross_salary <= 20000:
    income_tax_percentage = 20
else:
    income_tax_percentage = 30

# Calculate Income Tax
income_tax = (income_tax_percentage / 100) * gross_salary

# Calculate Net Salary
net_salary = gross_salary - income_tax

# Display results
print("Employee ID:", employee_id)
print("Basic Salary:", basic_salary)
print("Allowances:", allowances)
print("Gross Salary:", gross_salary)
print("Income Tax:", income_tax)
print("Net Salary:", net_salary)
```

3.2 - Ternary Expressions

A shorthand for if-else statements that evaluates to one of two values based on a condition.

- Syntax : `<value_if_true> if <condition> else <value_if_false>`

Q14. Write a Python program to Check whether the number is Even or Odd using Ternary Operator.

In [ ]:
```
n = int(input("Enter number: "))

# Use Python's ternary operator
result = "The number is Even" if n % 2 == 0 else "The number is Odd"

# Display the result
print(result)
```

```
The number is Odd
```